

(No Model.)

8 Sheets—Sheet 1.

P. C. HEWITT.
GLUE MAKING MACHINERY.

No. 548,055.

Patented Oct. 15, 1895.

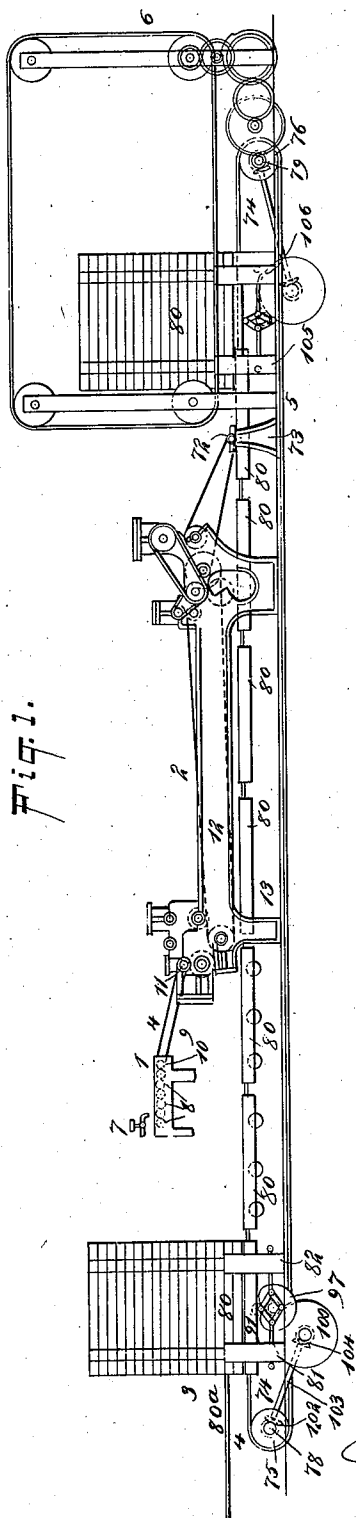


Fig. 1.

WITNESSES:

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C. Sedgwick

INVENTOR

P. C. Hewitt

BY

Munn & Co.

ATTORNEYS.

(No Model.)

8 Sheets—Sheet 2.

P. C. HEWITT.
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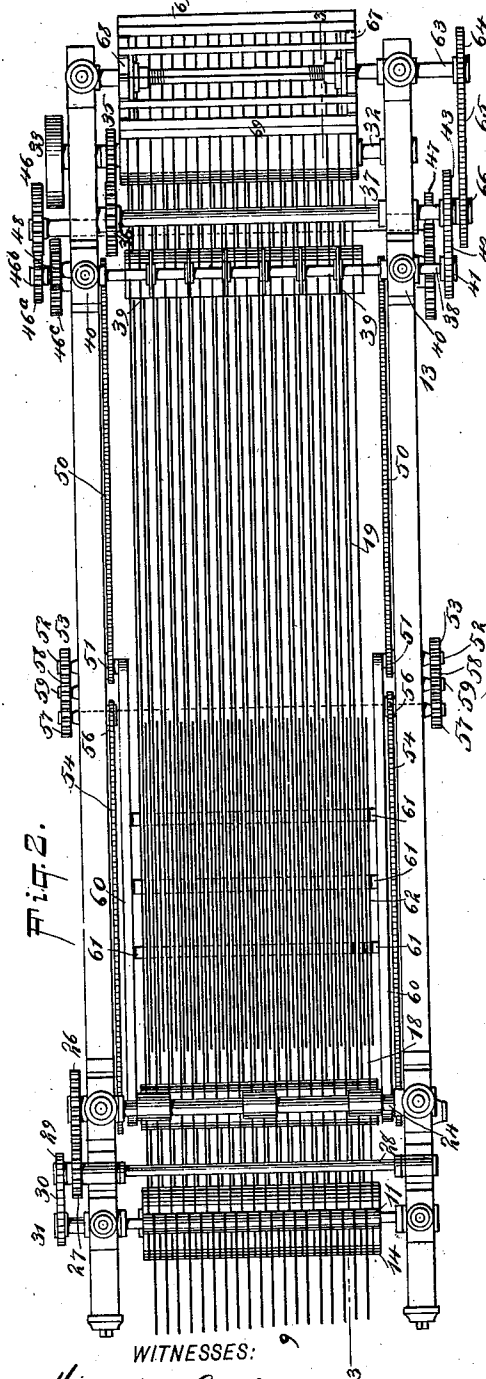


Fig. 2.

WITNESSES:

William Goebel.
C. Sedgwick

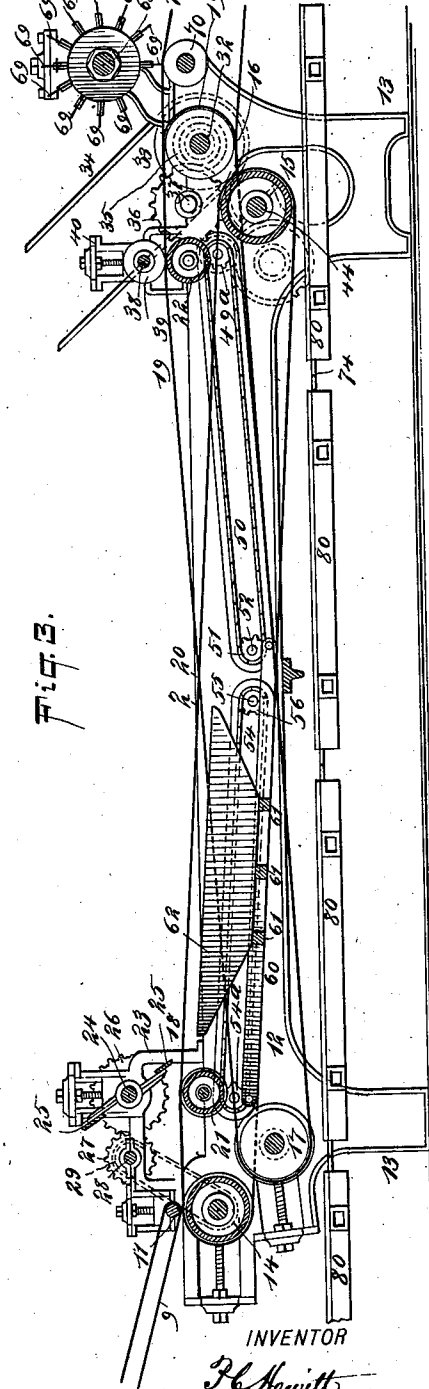


Fig. 3.

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ATTORNEYS.

(No Model.)

8 Sheets—Sheet 3.

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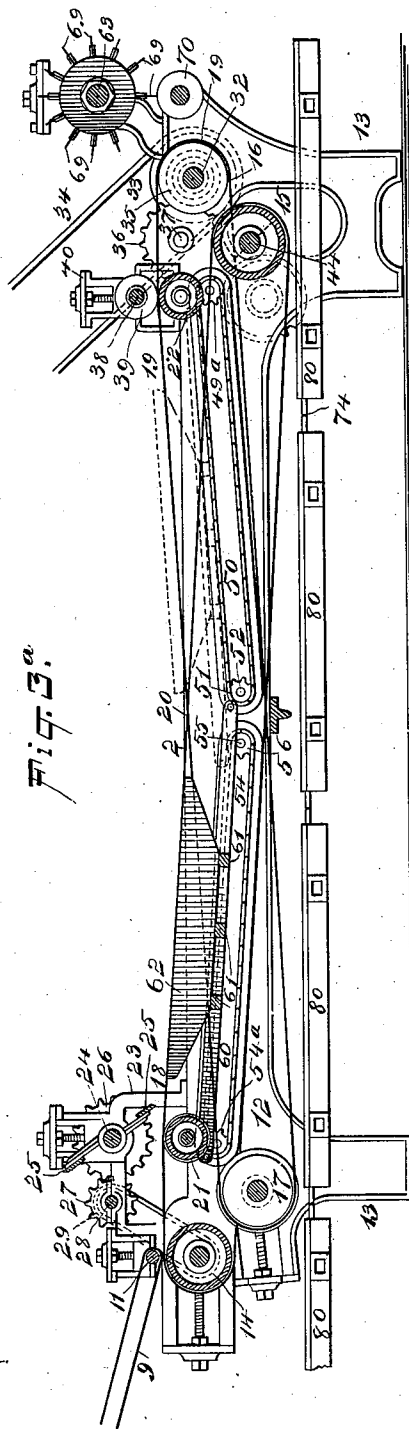


Fig. 3a.

WITNESSES:

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(No Model.)

8 Sheets—Sheet 4.

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Fig. 5.

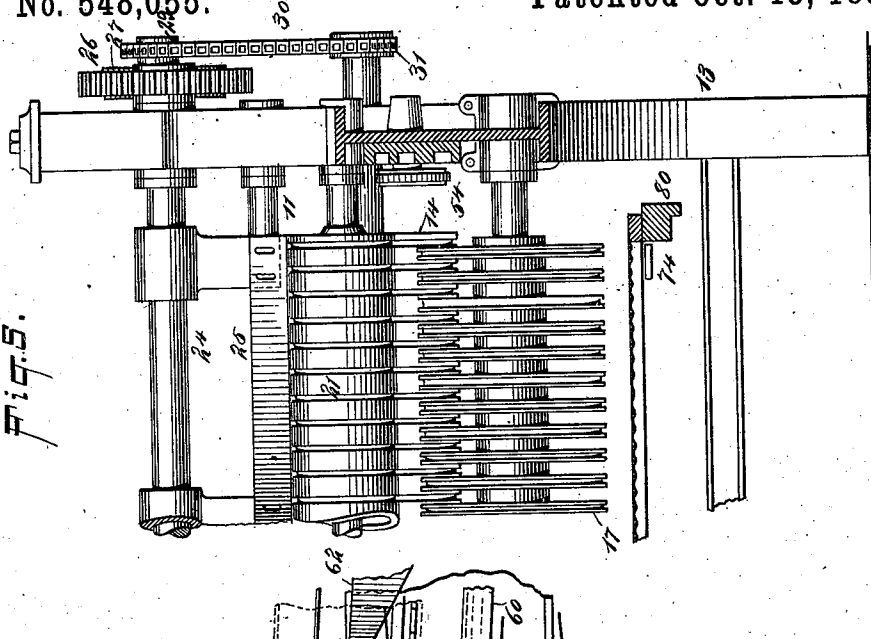
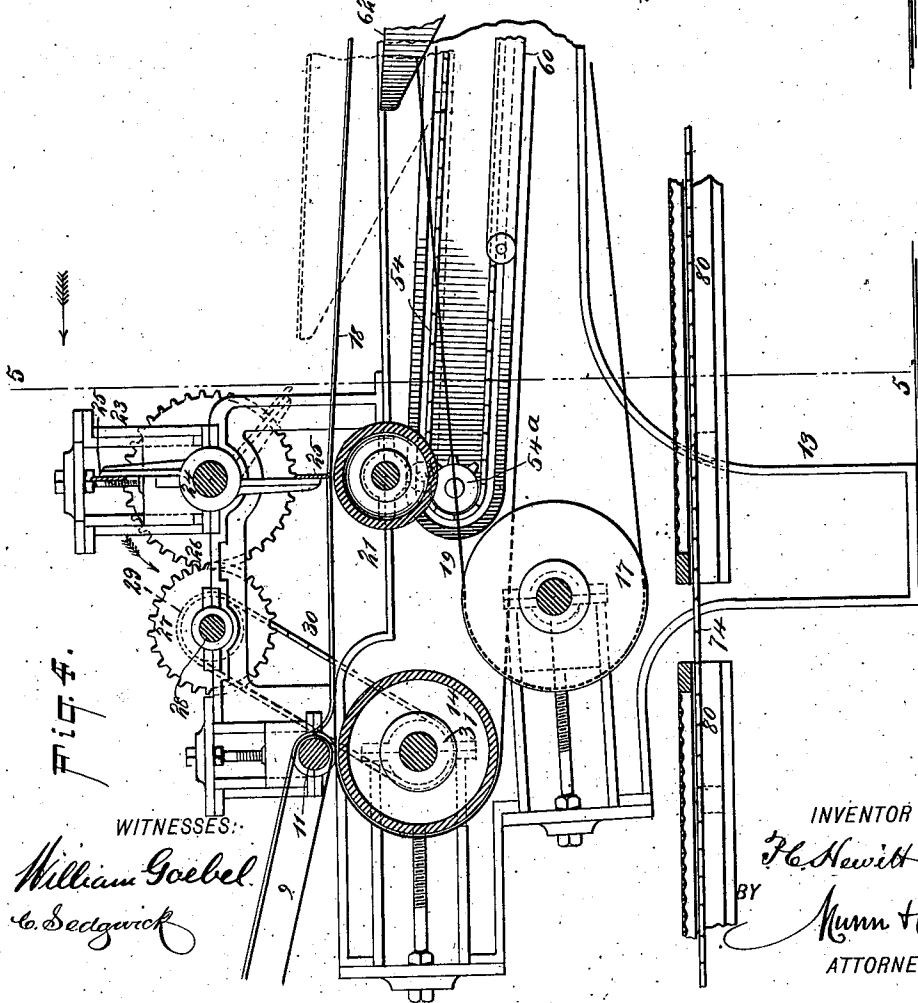


Fig. 4.



WITNESSES:

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INVENTOR

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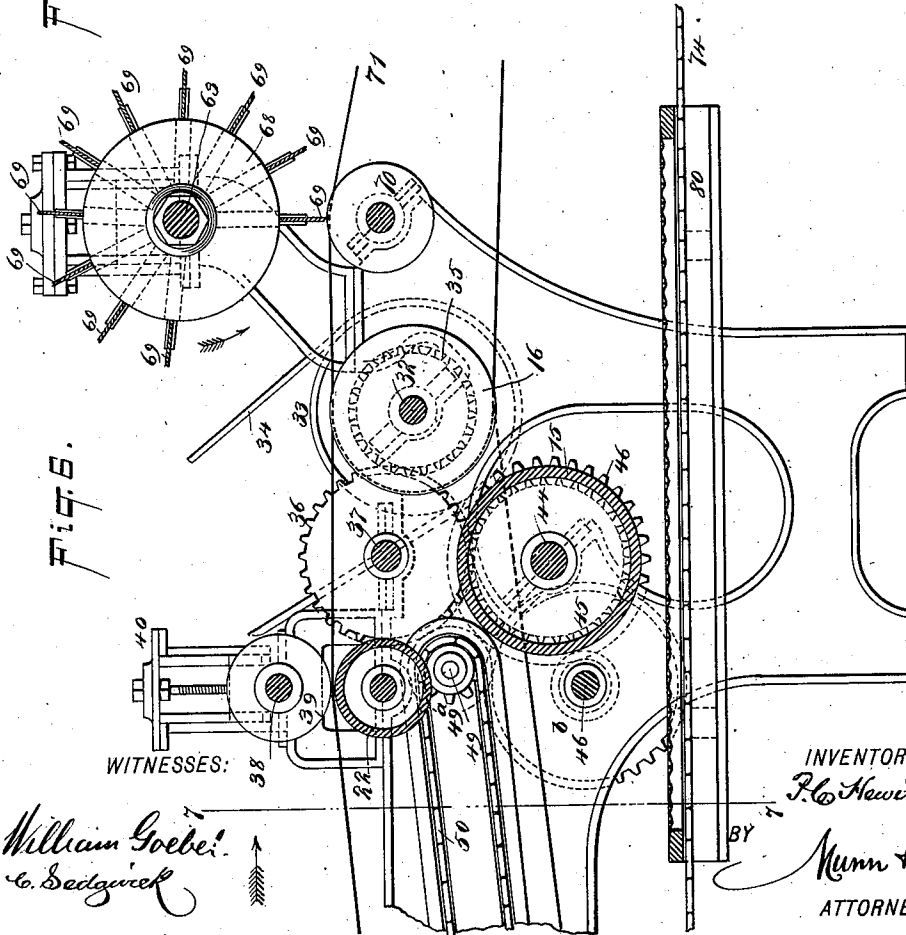
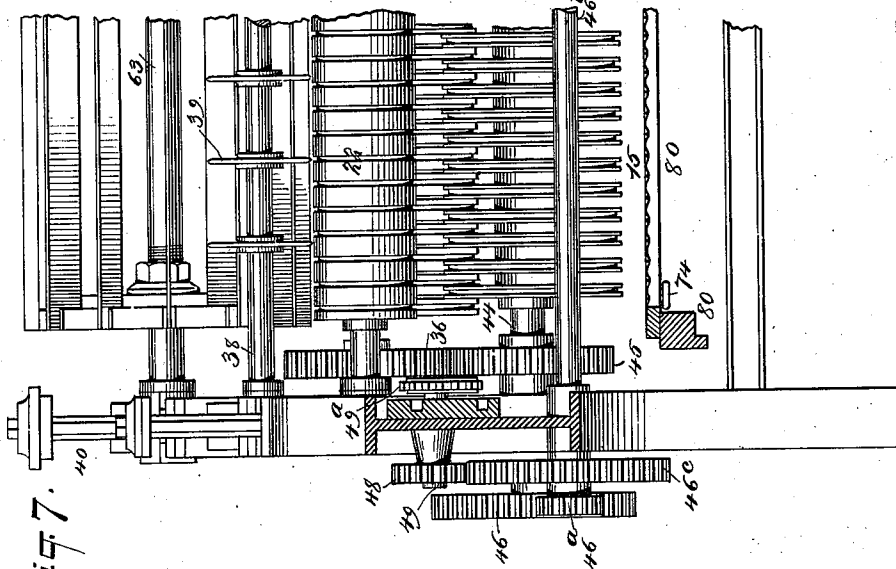
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8 Sheets—Sheet 5.

P. C. HEWITT.
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No. 548,055.

Patented Oct. 15, 1895.



WITNESSES:

William Goebel.
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ATTORNEYS.

(No Model.)

8 Sheets—Sheet 6.

P. C. HEWITT.
GLUE MAKING MACHINERY.

No. 548,055.

Patented Oct. 15, 1895.

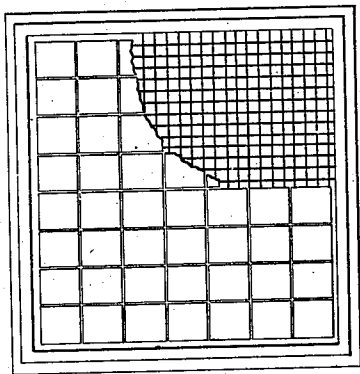


Fig. 3.

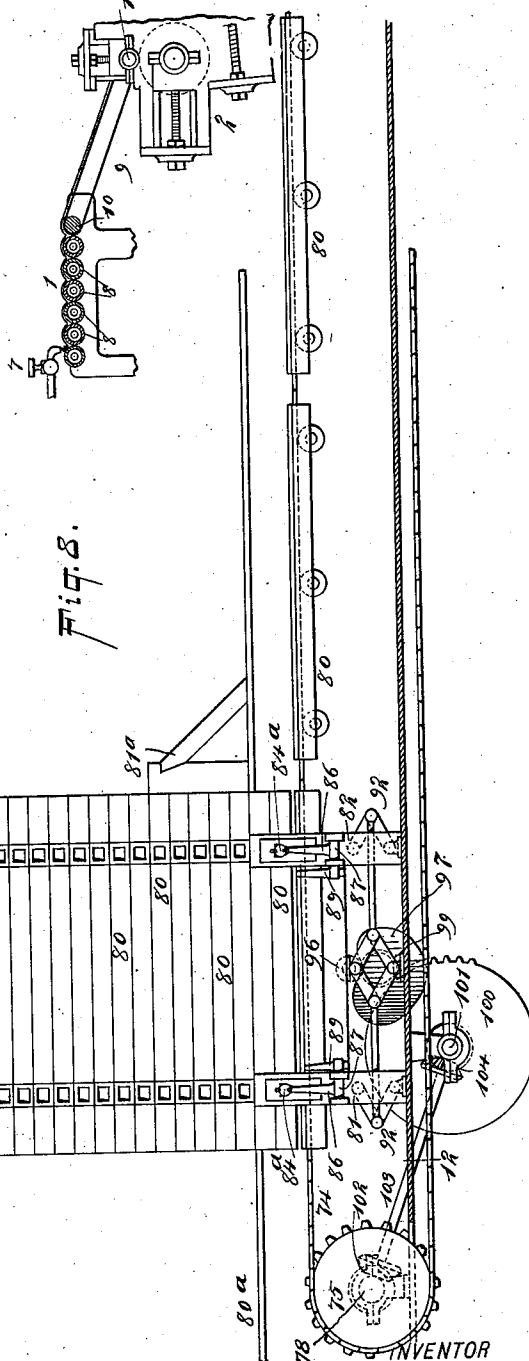


Fig. 8.

WITNESSES:

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INVENTOR
P. C. Hewitt
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Kum & Co

ATTORNEYS.

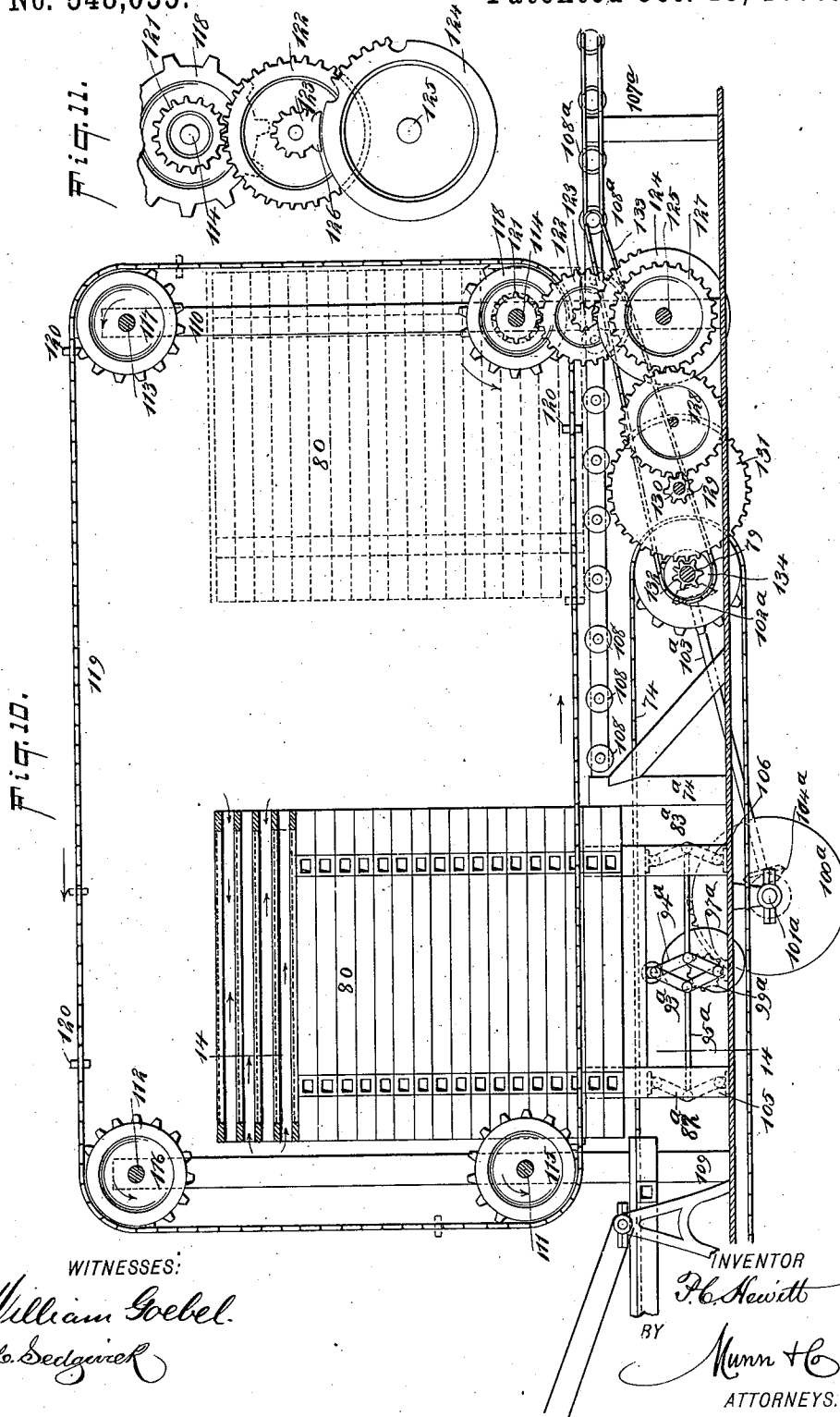
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8 Sheets—Sheet 7.

P. C. HEWITT.
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No. 548,055.

Patented Oct. 15, 1895.



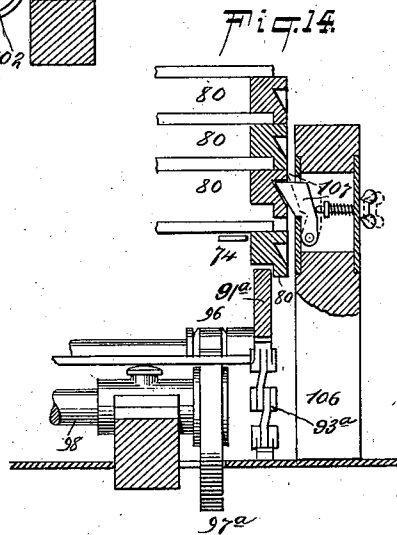
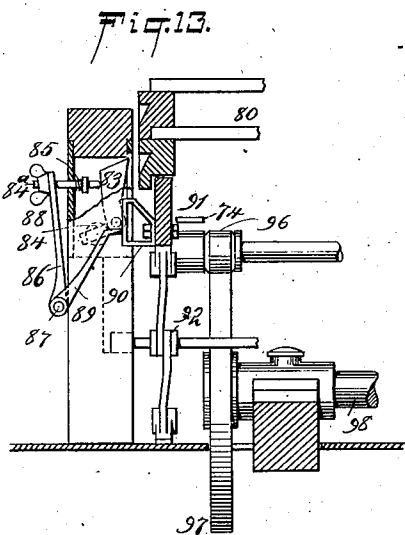
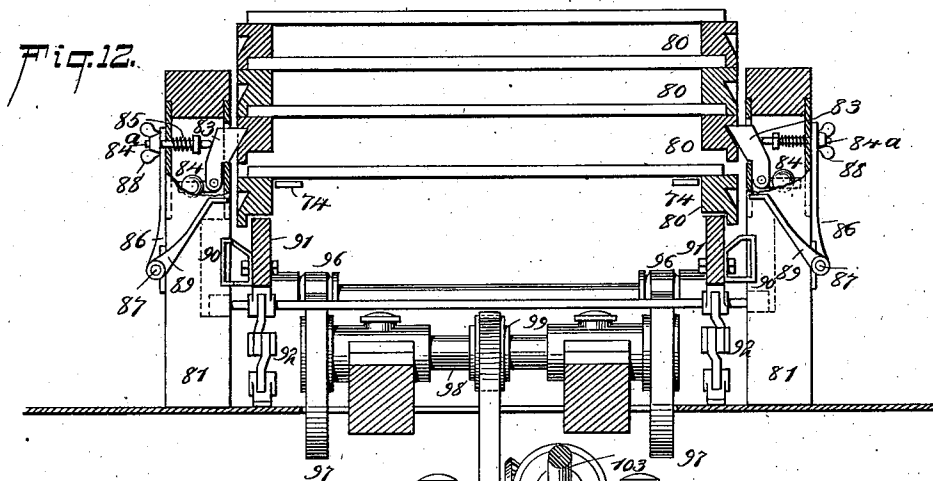
(No Model.)

8 Sheets—Sheet 8.

P. C. HEWITT.
GLUE MAKING MACHINERY.

No. 548,055.

Patented Oct. 15, 1895.



UNITED STATES PATENT OFFICE.

PETER COOPER HEWITT, OF NEW YORK, N. Y.

GLUE-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 548,055, dated October 15, 1895.

Application filed October 25, 1893. Serial No. 489,081. (No model.)

To all whom it may concern:

Be it known that I, PETER COOPER HEWITT, of New York city, in the county and State of New York, have invented new and Improved Glue-Making Machinery, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a diagrammatic side elevation of my improved glue-making machine. Fig. 2 is a plan view of the sheet separator and subdivider. Fig. 3 is a vertical longitudinal section taken on line 3 3 in Fig. 2. Fig. 3^a is a similar view showing the transfer-table in the position of contact with the glue sheet. Fig. 4 is an enlarged longitudinal section of the receiving end of the sheet separator and subdivider, the section being taken on line 3 3 in Fig. 2. Fig. 5 is a partial vertical transverse section of the sheet separator and subdivider, taken on line 5 5 in Fig. 4, looking in the direction indicated by the arrow. Fig. 6 is an enlarged longitudinal section of the delivery end of the sheet separator and subdivider, taken on the line 3 3 of Fig. 2. Fig. 7 is a partial vertical transverse section of the sheet separator and subdivider, taken on line 7 7 in Fig. 6, looking in the direction indicated by the arrow. Fig. 8 is a side elevation, partly in section, of the net-stacker, conveyer, glue-cooler, and sheet-former. Fig. 9 is a plan view of one of the nets supporting a subdivided sheet of glue, a part of which is broken away to show the net. Fig. 10 is a side elevation, partly in section, of the net-stacker. Fig. 11 is an enlarged detail side elevation of the gearing of the stack-moving mechanism. Fig. 12 is an enlarged transverse section of the net-frame-releasing mechanism on the line 12 12 in Fig. 8. Fig. 13 is a detail view of the same, showing one of the frames released and about to be dropped on the conveyer. Fig. 14 is a vertical transverse section taken on line 14 14 in Fig. 10; and Fig. 15 is an enlarged elevation, partly in section, of the net-stacker.

Similar figures of reference indicate corresponding parts in all the views.

Heretofore in the manufacture of glue it has been customary to set the glue in molds, forming cakes, then to cut the cakes into sheets and lay the sheets out on the nets by

hand, place the nets in stacks, also by hand, and to remove them to the drying-room, there to remain until the glue is dry, after which the glue is removed, the nets stacked by hand into piles of convenient height, which are returned to the glue-making department, to be again unstacked, filled, and stacked by hand and returned to the drying-room.

The object of my invention is to provide a glue-making machine in which the process of making glue may be carried on continuously, and in which the nets may be unstacked, loaded with sheet-glue, and stacked by machinery ready for transportation to the drying-room, thus doing away with manual labor.

My invention consists in the combination of a device for forming glue into sheets, for spacing and subdividing the sheets, and for cutting the sheets into sizes for delivery to the drying-nets, mechanism for removing the nets from the stack and carrying them forward successively to receive the subdivided sheets of glue, and mechanism for placing the filled nets in stacks and removing the stacks from the machine, all as will be hereinafter more fully described.

In the diagram Fig. 1 I have shown the apparatus 1 for cooling the glue and forming it into sheets arranged in operative relation to the separator and subdivider 2. I have also shown the relation of the net-unstacker 3, net-conveyer 4, net-stacker 5, and the stack-remover 6 to each other. The glue-cooling and sheet-forming apparatus 1 is shown and described in my application for Letters Patent of the United States, Serial No. 481,621, entitled "Apparatus for cooling glue and forming it into sheets," filed July 27, 1893. As this apparatus forms no part of my present invention, except in so far as it enters into combination with other mechanism, a complete description of the same will not be necessary.

The liquid glue is supplied through a suitable valve 7 to a cooler consisting of a series of cooling-cylinders 8, upon which the glue is spread out, cooled, and delivered in the form of a sheet to the endless conveyer 9, the said conveyer consisting of a series of cords passing over a roller 10 in the glue-cooler and sheet-former 1 and over a roller 11 in the separator and subdivider 2.

In the side pieces 12 of the frame 13 of the separator and subdivider 2 are journaled drums 14 15 16 17, formed of wheels which receive the endless cords 18 19. The drums 14 16 are journaled in the frame 13 in a plane above the drums 17 and 15. The drums 14 15 receive the cords 18, and the drums 16 17 receive the cords 19, and the paths of these two series of endless cords cross each other at 20 at or near the center of the machine. The cords 18 pass over and lie in the grooves of a grooved drum 21, and the cords 19 pass over and lie in the grooves of a grooved drum 22. The journal-boxes of the drums 14 17 are placed in slots in the end of the frame 13 and are adjusted by screws and nuts, so that the tension of the endless cords may be adjusted. The roller 11 is journaled in the frame 13 with reference to the drum 14 and cords 18, so that the endless conveyer 9 may deliver the sheets of glue formed in the apparatus 1 to the series of endless cords 18.

In an upward extension 23 of the frame 13 is journaled a shaft 24, carrying arms provided with cutters 25, which are capable of making contact with the periphery of the drum 21 as they are revolved, thereby cutting the continuous sheet of glue delivered by the endless conveyer 9 to the cords 18 in lengths suitable for filling the nets. On the end of the shaft 24 is mounted a spur-wheel 26, which is engaged by a pinion 27, mounted on a shaft 28, journaled in the extension 23. The said shaft is provided with a sprocket-wheel 29, receiving an endless chain 30, which passes around a sprocket-wheel 31 on the shaft of the drum 14. The shaft 32 of the drum 16 is provided with a pulley 33, which receives the belt 34, by which power is supplied to the machine. On the shaft 32 is mounted a pinion 35, which engages a spur-wheel 36 on the shaft 37, journaled in the frame 13.

Above the circumferentially-grooved drum 22 is journaled a shaft 38, which carries a series of rotary cutters 39, the peripheries of which are near or in contact with the upper surface of the drum 22. The shaft 38 is journaled in adjustable boxes in pillow-blocks 40, secured to the top of the frame 13, and the said shaft is furnished with a sprocket-wheel 41, which receives motion through a chain 42 from a sprocket-wheel 43 on the shaft 37. The shaft 44 of the drum 15 is provided with a spur-wheel 45, which takes motion from the spur-wheel 36 on the shaft 37, and upon the ends of the said shaft 44 are spur-wheels 46 47, which engage pinions 46^a on the ends of a shaft 46^b, journaled in the frame 13, said shaft also carrying next said pinions gear-wheels 46^c, engaging pinions 48 on short shafts 49, projecting inwardly from opposite sides of the frame 13 and carrying on their inner ends sprocket-wheels 49^a, engaging endless chains 50. The said chains 50 move in inclined planes opposite grooves formed in the

sides of the frame 13, parallel with the path of the cords 19. The lower ends of the chains 50 are received on sprocket-wheels 51, secured to shafts 52, which project outwardly through the sides of the frame 13. Each shaft 52 is provided on its outer end with a spur gear-wheel 53. On the opposite side of the line of intersection of the cords 18 19 is arranged a similar pair of chains 54, running in inclined planes opposite grooves in the sides of the frame 13, the said grooves being parallel with the cords 18. The shafts 55, carrying the sprocket-wheels 56, which support and drive the chains 54, are furnished outside of the frame 13 with spur-wheels 57, and the spur-wheels 53 and 57 are connected mechanically by intermediate spur-wheels 58, journaled on studs 59, projecting from the sides of the frame. The upper ends of the chains 54 are supported by sprocket-wheels 54^a, which turn on studs projecting inwardly from the sides of the frame 13. By means of this construction the chains 50 and 54 are made to revolve simultaneously in the same direction.

Upon each side of the machine a bar 60 is pivotally connected with a link of each of the chains 50 and 54, and the said bars 60 are connected by cross-bars 61. The said cross-bars, in connection with upwardly-projecting longitudinal plates 62, form a transfer-table for lifting and carrying a sheet of glue from the cords 18 and lowering it onto the cords 19 as soon as the sheet of glue comes into position on the cords 18. The cords 19 are made to travel faster than the cords 18 by proportioning the gears which drive the drum 16, carrying the cords 19 to cause it to revolve faster than the drum 14, which drives the cords 18. The difference between the speed of the cords 18 and 19 is such as to leave a space of some six or eight inches between the sheets when delivered on the cords 19 by the transfer-table or sufficient space to correspond to the space existing between the nets on the net-conveyer, as will be described later on.

The mechanism by which the sheets are spaced I shall call a "spacer," to obviate the necessity of further describing it.

It will thus be seen that the table 62 is carried forward to the receiving end of the machine by the chains 50 and 54, and that owing to the inclination of the chains the table 62 is inclined, so that when those links of the said chains pass around the sprocket-wheels 49^a, 51, 54^a, and 56, by which the bars 60 are supported, these chains carry the bars 60, by which the table 62 is supported, upwardly with a parallel motion, the bars 60 being guided by the extension of their ends beyond their pivotal connection with the chains which project into the slots in the side of the frame, so that the bars of the table, being parallel with the cords 18, engage the entire sheet of glue carried by the cords, lifting the glue from the cords. The transfer-table 62 is raised by the chains as they revolve, and at

the same time is moved forward. At the instant the said transfer-table comes into contact with the glue sheet carried by the cords the velocity of its forward motion is the same as that of the cords 18 and the glue sheet carried thereby. A further movement of the chains carries the table with the sheet of glue thereon toward the delivery end of the machine, at the same time tilting the table, so as to bring the sheet of glue parallel with the cords 19, when the bars 60, together with the table, are dropped below the level of the cords by the carrying of the pivotal connections of the bars 60 with the chains around the sprocket-wheels 49^a and 56 at the delivery ends of the chains.

As the transfer-table descends, its forward motion is retarded, the motion being the resultant of the forward and downward movements, so that when the glue sheet is delivered by the transfer-table to the cords 19 the transfer-table is moving at the same speed as the cords 19, which speed, although slower than the speed of forward movement of the transfer-table when passing from the cords 18 to the cords 19, is faster than that of the cords 18.

The sheet is carried forward by the cords 19 under the cutters 39, which cut the sheet into strips. Beyond the cutters 39 is arranged a shaft 63, which is provided with a sprocket-wheel 64, taking power through the chain 65 from a sprocket-wheel 66 on the shaft 37. The shaft 63 carries two disks 67 68, in which are fastened knives 69, parallel with the shaft 63. The knives 69 are arranged with reference to the strips of glue carried by the cords 19, so that the said knives will cut the strips into short lengths or squares by contact of the knives with the roller 70, journaled in the frame 13. The glue in its passage to the knives 69 and roller 70 is transferred from the cords 19 to the cords 71, passing over the said roller 70, also around a roller 72, journaled in pillar-blocks 73 a short distance from the delivery end of the machine. Endless chains 74 run over sprocket-wheels 75 76, carried by shafts 78 79. The said chains 74 are arranged parallel with each other and at a suitable distance apart to receive the net-lowering mechanism or net-frames 80 and form an endless carrier for conveying the said frames under the separator and subdivider and under the roller 72.

On opposite sides of the endless carrier at the receiving end of the machine are arranged standards 81 82, two upon each side of the carrier. The distance between the standards 81 82 of one side and the standards of the opposite side is sufficient to receive between them the net-frames 80. The net-frames are provided with two notches in each side for receiving the retaining-pawls 83, which are capable of projecting beyond the inner faces of the standards 81 82 and also of dropping back into a recess in the standard when released, each pawl being provided with a

weighted arm 84 for causing it to drop back when released in the manner presently to be described.

In a plate covering the back of the recess containing the pawl 83 is inserted a rod 84^a, which is pressed forward into contact with the pawl 83 by the spiral spring 85, surrounding it and abutting against the plate. The outer end of the rod 84^a passes through an arm 86, secured to a rock-shaft 87, journaled in ears projecting from the standard 82. Upon the rod 84^a, outside of the arm 86, is placed a wing-nut 88, and upon the shaft 87 is secured an arm 89, extending toward the center of the machine into the path of a tripper 90, secured to the net-lowering bar 91. The pawls 83 and accompanying devices are the same upon opposite sides of the machine, but oppositely arranged with respect to each other, so that the pawls on one side engage the notches in one side of the net-frame and the pawls on the other side engage the notches in the other side of the frame. The bars 91 are connected at opposite ends with toggle-joints 92, the said toggle-joints being oppositely arranged with respect to each other, and a pair of oppositely-arranged toggle-joints 93 94 are connected with the middle of each bar 91 and also with the floor, and the intermediate pivots of the toggle-joints are connected by rods 95 with the central pivot of the toggle-joints at the ends of the bars 91. This arrangement of toggle-joints and bars forms a parallel motion, whereby the bars 91 are kept in a horizontal position when raised or lowered in the manner hereinafter described.

Each bar 91 carries a roller 96, which rides upon a cam 97, secured to the shaft 98, there being one such cam on each end of the said shaft, and to the shaft 98 is imparted an intermittent rotary motion by a segmental pinion 99 on the said shaft and a segmental gear-wheel 100 on the shaft 101, which receives its motion from the shaft 78 through miter-gearing 102, the shaft 103, and miter-gearing 104. The stack of net-frames 80 is delivered to the unstacking device from the platform 80^a. Posts 81^a, erected on the said platform, act as stops when placing the net-frames in position to be fed to the unstacker.

At the opposite end of the machine, beyond the roller 72 and upon opposite sides of the endless net-elevator and frame-carrier, are arranged posts 105 106, and in the said posts are pivoted spring-pressed pawls 107, which are capable of engaging the notches in the net-frame, and below the level of the endless chains 74 is arranged mechanism like that already described, comprising bars 91^a, toggle-joints 82^a 83^a 93^a 94^a, rods 95^a, the cam 97^a, segmental pinion 99^a, segmental spur-wheel 100^a, journaled on the shaft 101^a, which takes power through miter gearing 104^a, shaft 103^a, and miter gearing 102^a from the shaft 79.

Above the chain 74, at the delivery end of

the machine, is arranged a frame 107^a, in which are journaled rollers 108 for receiving and supporting the stack of frames when loaded and ready for delivery, and posts 5 109 110 support studs 111, 112, 113, and 114, upon which turn the sprocket-wheels 115, 116, 117, and 118, there being one set of four sprocket-wheels on each side of the machine, and upon the said sprocket-wheels is sup- 10 ported an endless chain 119, carrying bars 120. Each sprocket-wheel 118 is provided with a pinion 121, which receives motion from a spur-wheel 122, to which is attached a seg- mental pinion 123, which is engaged by the 15 segmental spur-wheel 124 on the shaft 125, the said segmental spur-wheel having a por- tion of its periphery plain to receive the stop 126, formed on the segmental pinion. The shaft 125 is provided with a spur-wheel 127, which is connected through an intermediate spur-wheel 128 with a pinion 129 on the shaft 130, and the said shaft 130 carries a spur- wheel 131, which receives motion from a pin- 20 ion 132 on the shaft 79. The rollers 108^a, which form a continuation of the series of rollers 108, receive motion through the chain 133 from a sprocket-wheel 134 on the shaft 79. The first of the series of rollers 108^a is provided with a sprocket-wheel for receiving the chain and is connected with the other 30 rollers in the series by a chain-gearing.

The operation of my improved machine is as follows: The melted glue being delivered by the valve 7 to the cylinders 8 is spread out 35 and formed into a thin sheet and cooled as it is carried forward by the cylinders, the said cylinders being cooled by the passage of cold water through them or the application of cold water to the under surface of the cylinders, 40 as described in the application for a patent to which reference has been made. The cooled sheet of glue is delivered to the end- less conveyer 9, which in turn delivers it to the series of cords 18, which carry it forward 45 over the drum 21, where it is cut into lengths by the knives 25. As soon as the sheet of glue comes above the table 62, the said table is raised by the chains 50 54, lifting the sheet of glue from the cords 18. The continued 50 forward movement of the said chains 50 54 carries the table rapidly forward, at the same time tilting it, so as to compel it to take a position parallel with the cords 19. When the table is dropped, it leaves the sheet of glue 55 upon the cords 19. The said cords 19 move forward with a velocity which is greater than the velocity of the cords 18, thereby causing the sheet of glue to advance sufficiently to leave a space of six or eight inches between 60 the sheet deposited and the next succeeding sheet. The table 62 after being dropped is quickly returned to its position at the receiv- ing end of the machine, while in the mean- time another sheet of glue has been carried 65 forward into position to be taken by the table and carried forward to the cords 19, as before

described. By carrying forward the sheet of glue from the cords 18 to the cords 19 and increasing the speed of its travel on the cords 19 sufficient space is left between the sheets 70 to allow for spaces between the nets, the spacing being governed by the thickness of the net-frames, also by the distance required between the nets to allow for the operation of the net- stacker. The sheet of glue is carried forward 75 by the cords 19 underneath the revolving cut- ters 39, which divide it into strips of suitable width, and the said strips are moved forward and delivered to the cords 71. In the passage of the strips over the roller 70 the said strips are 80 cut up into suitable lengths by the knives 69, and the sheet of glue thus subdivided is car- ried forward by the cords 71 to the roller 72, where it is delivered to the net 80. While the sheet of glue is being formed, cut into sheets, 85 spaced, cut into strips, and further subdivided by being cut into small squares preparatory to its delivery to the net-frames, and the frames having been placed in the form of a stack above the unstacking mechanism, the net- 90 frames 80 are delivered one by one to the end- less chain 74 by the unstacking mechanism 3, which operates as follows: The stack of frames being held by the pawls 83 to engage the lower frame of the stack, the bars 91 are 95 lifted by the cams 97. As the said bars 91 come into contact with the under surface of the lower frame, the trippers 90 engage the arms 89, thus turning the rock-shaft 87, and through the movement of the arms 86 with- 100 drawing the spring-pressed rods 84^a from the pawls 83, allowing the weights 84 to tilt the pawls and disengage them from the net-frames 80, as the weight of the net is taken from the pawls by the bars 91. The continued move- 105 ments of the cams 97 allow the bars 91 to de- scend, thus lowering the entire stack of net- frames, and at the same time releasing the arms 89 86, allowing the spring-pressed rods 84^a to move forward against the pawls 83, so 110 that when the second frame from the bottom of the stack reaches the pawls the said pawls engage the notches in the frame and support the entire stack. The lower net-frame of the stack, being below the device, continues its de- 115 scent until it rests upon the endless chain 74, which moves the frame forward from beneath the stack of frames, so as to permit of an- other excursion of the bars 91. The chain 74 and the intermittent unstacking mechanism 120 are timed with reference to each other and to the delivery of the sheet from the sheet sep- arator and subdivider, so that the cords 71 may deliver a subdivided sheet of glue to a net 80 as it passes under the roller 72, the re- 125 quired intermittent motion of the unstacking mechanism being secured by the segmental pinion 99 and wheel 100, the said wheels be- ing connected with the same source of power that operates the other portions of the ma- 130 chine. The frames after being filled are still carried forward until arrested by the posts

74^a, when they are received by the bars 91^a of the stacking mechanism, which correspond to the bars 91 of the unstacking mechanism at the opposite end of the machine, while the said bars are in their lowest position, and the said bars are raised by the cam 97^a in the manner above described, lifting the net-frame 80 from the chain 74, carrying upward with the said frame the superposed frames until it is brought into engagement with the pawls 107, thus adding one frame after another to the bottom of the stack until a stack is formed of convenient size for handling. The height of the stack is controlled by the gearing connected with the endless chain 119. The said gearing takes its motion from some moving part of the machinery or from the source of power and is timed so as to work synchronously with the unstacker and the separator and subdivider. The chain 119 is moved forward intermittently by the segmental wheel 124, the segmental pinion 123, the spur-wheel 122, pinion 121, and sprocket-wheel 118. The bars 120, connected with the chains 119 on opposite sides of the machine, engage the stack of net-frames 80 and move it forward over the rollers 108 until it is engaged by the power-driven rollers 108^a, which carry it away from the delivery end of the machine to be transferred to the drying-room.

Although I have described my improvement as consisting of a glue-cooler, a subdivider and spacer, a net-unstacker, and a net-stacker, I do not confine myself to this arrangement, as the unstacker and the subdivider and spacer may be omitted, and the glue may be delivered directly to the nets carried by the endless chains, and the nets may be stacked in the manner already described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In glue making machinery, a continuous glue sheet former, a cutter, a conveyer carrying nets, and means for spacing the sheets of glue and delivering them on the netting within the sheet frame, the net conveyer being constructed to travel at a speed greater than the rate of formation of the sheet of glue.

2. In glue making machinery, the combination with a glue sheet former, of a conveyer traveling at a greater rate of speed than the formation of the sheet of glue, a cutter and a carrier for delivering the sheets of glue from the former to the said conveyer, substantially as described.

3. In glue making machinery, a net frame unstacker, an endless receiving conveyer for receiving a stack of nets, mechanism for moving the net frame up and down, and pawl-releasing mechanism for allowing the nets to descend in the unstacker, the several parts being arranged to work in unison with each other, as herein specified.

4. In glue making machinery, a conveyer for carrying the nets, a glue sheet former, a

net filler, and a net stacker, combined and arranged as herein specified.

5. In glue making machinery, a net unstacker, a conveyer for carrying the nets, a glue sheet former, a glue sheet separator and subdivider, a net filler, and a net stacker, combined and arranged substantially as herein described, whereby the process of making glue is shortened and made continuous.

6. The combination in glue making machinery, of a glue cooler and sheet former and subdivider, nets for receiving the cooled glue, mechanism for stacking the nets, and connective mechanism for causing the several parts of the machine to work automatically in unison, as herein described.

7. In glue making machinery, a glue cooler and continuous glue sheet former, a cutter for sub-dividing the continuous glue sheet into short lengths or sheets, a glue sheet carrier constructed for receiving the glue sheet from the former and moving it forward at an increased speed, spacing the sheets, and means, substantially as described, for delivering the subdivided glue to nets.

8. The combination in a glue making machine, of a glue cooler and sheet former, a net unstacker, a net stacker and lifting, carrying or depositing mechanism for carrying the nets from the net unstacker to and removing them from the glue cooler and sheet former and delivering them to the net stacker, substantially as specified.

9. The combination in glue making machinery, of a glue cooler and sheet former, a net stacker, and mechanism for carrying the nets to and removing them from the glue cooler and sheet former, and delivering them to the net stacker, substantially as specified.

10. The combination in glue making machinery, of a glue cooler and sheet former, a net unstacker, a net stacker, mechanism for carrying the nets from the unstacker to and removing them from the glue cooler and sheet former and delivering them to the net stacker, and mechanism for removing the stacks of nets when formed, substantially as specified.

11. In glue making machinery, the combination with two series of conveying cords and mechanism for driving the same at different speeds, of lifting, carrying and depositing mechanism for delivering the sheet of glue from one series of cords to the other series, substantially as specified.

12. In glue making machinery, the combination, with two series of conveying cords, and mechanism for driving the same at different speeds, of a transfer table for transferring the sheets of glue from one series of cords to the other series of cords, substantially as specified.

13. In glue making machinery, the combination of two series of endless cords and 19 inclined in opposite directions, mechanism for driving the two series of endless cords at different speeds, and a tilting transfer table

62, for lifting the glue from one series of cords and delivering it to the other series of cords, substantially as specified.

14. In glue making machinery, the combination of a sheet cutter, two series of endless cords 18 and 19 inclined in opposite directions, a spacer consisting of mechanism for driving the two series of endless cords at different speeds, a tilting transfer table 62, for lifting the glue from one series of cords and delivering it to the other series of cords, inclined endless chains 50, 54 for carrying and tilting the transfer table and a subdivider, substantially as specified.

15. In glue making machinery, a net frame stacker formed of net frame supports arranged to move in vertical planes consisting of cams and intermitting gearing for imparting intermittent motion to the said supports, and pawls for engaging the net frames as they are successively raised by the supports, substantially as specified.

16. In glue making machinery, the combination of mechanism for filling the nets with sheets of glue, mechanism for stacking the nets after they are filled, and a net-stack remover, for taking the net stack from the net stacker, substantially as specified.

17. The combination, with a net stacker, of mechanism for automatically removing the stack of nets from the net stacker, and connective mechanism for connecting the net stacker with the working parts of the machine, whereby the net stacker and stack remover are made to operate in unison with the other parts of the machine, substantially as specified.

18. The combination, with the net stacker, of a pair of endless chains, one or more bars carried by the endless chains for engaging the stack of nets, and mechanism for imparting intermittent motion to the endless chains, substantially as specified.

19. The combination with a net stacker and net stack mover, of a conveyer for automatically removing the stack of nets consisting of a prescribed number of nets from the net stacker, substantially as specified.

20. In glue making machinery, the combination of a net unstacker, constructed to receive a stack of nets, a net stacker, a net stack discharger and a conveyer for carrying nets from the unstacker to the stacker, as specified.

21. In glue making machinery, a glue sheet subdivider, a continuous sheet spacer, and mechanism for cutting the sheets in pieces after they are spaced, substantially as specified.

22. In glue making machinery, the combination with the net unstacking mechanism for delivering the net to the conveyer, of a net conveyer, for receiving the nets and carrying them forward for the reception of the sheets of glue, and moving them forward after they are filled, as herein specified.

23. In glue making machinery, the combination of mechanism for forming a continuous sheet of glue, mechanism for carrying the continuous sheet forward, a cutter for cutting

the continuous sheet of glue into lengths or sheets, a spacer for moving the sheets forward and at the same time spacing them, a cutter for slitting the sheets into strips, and a cutter for cutting the strips into squares, substantially as specified.

24. The combination with two sets of conveying cords arranged to run at different speeds, the cords of one set being arranged intermediately with reference to the cords of the other set, the two sets of cords being crossed at a slight angle, of a slatted tilting transfer table arranged to rise through and parallel with the set of slow running cords to move forward while still in an elevated position until its upper face is above the set of fast running cords and parallel with the said set, then descending through the said set of cords and returning to its original position, as herein specified.

25. The combination, with the slatted transfer table, of two pairs of endless chains, having their adjacent ends lower than their outlying ends, and bars pivotally connected with the chains and attached to the slatted table, substantially as specified.

26. In glue making machinery, the combination, with two sets of cords running at different speeds, of a transferrer and supporter, for removing the sheet of glue from one set of cords and delivering it to the other set of cords, at the same time supporting the sheet in its passage from one set of cords to the other, substantially as specified.

27. In glue making machinery, the combination of a glue sheet former, a net unstacker, a net conveyer, and a net stacker, substantially as specified.

28. In glue making machinery, the combination of a glue sheet former, a net unstacker, and a net conveyer, substantially as specified.

29. In glue making machinery, the combination of a glue sheet former, a net conveyer, and a net stacker, substantially as specified.

30. In glue making machinery, a spacer formed of two conveyers, and a transfer table for carrying the sheet of glue from one conveyer to the other conveyer, and mechanism for moving the transfer table in unison with the conveyers while receiving or delivering the glue, substantially as specified.

31. In glue making machinery, the combination with the net unstacking mechanism, of a net conveyer for receiving the nets and carrying them forward for the reception of the sheets of glue.

32. In glue making machinery, the combination of a net unstacker, a net stacker, and a conveyer for carrying nets from the unstacker to the stacker, as specified.

33. In glue making machinery, the combination of a net conveyer, a net filler, and mechanism for stacking the filled nets from below, leaving the stack free at the top, for removal as specified.

34. In glue making machinery, the following elements in combination: a net conveying

mechanism which occasions the travel from one point to another of glue carrying nets, net lifting and lowering mechanism operating in conjunction with said net conveying mechanism, and means for supplying the nets with sheets of glue, substantially as set forth.

35. In glue making machinery, the following elements in combination; a conveyer for transporting glue carrying nets, an elevator

at one end of said ways for lowering the nets, to a net stacking mechanism which operates in conjunction with said elevator, and mechanism for delivering sheets of glue to the nets, substantially as set forth.

PETER COOPER HEWITT.

Witnesses:

F. W. HANAFORD,
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